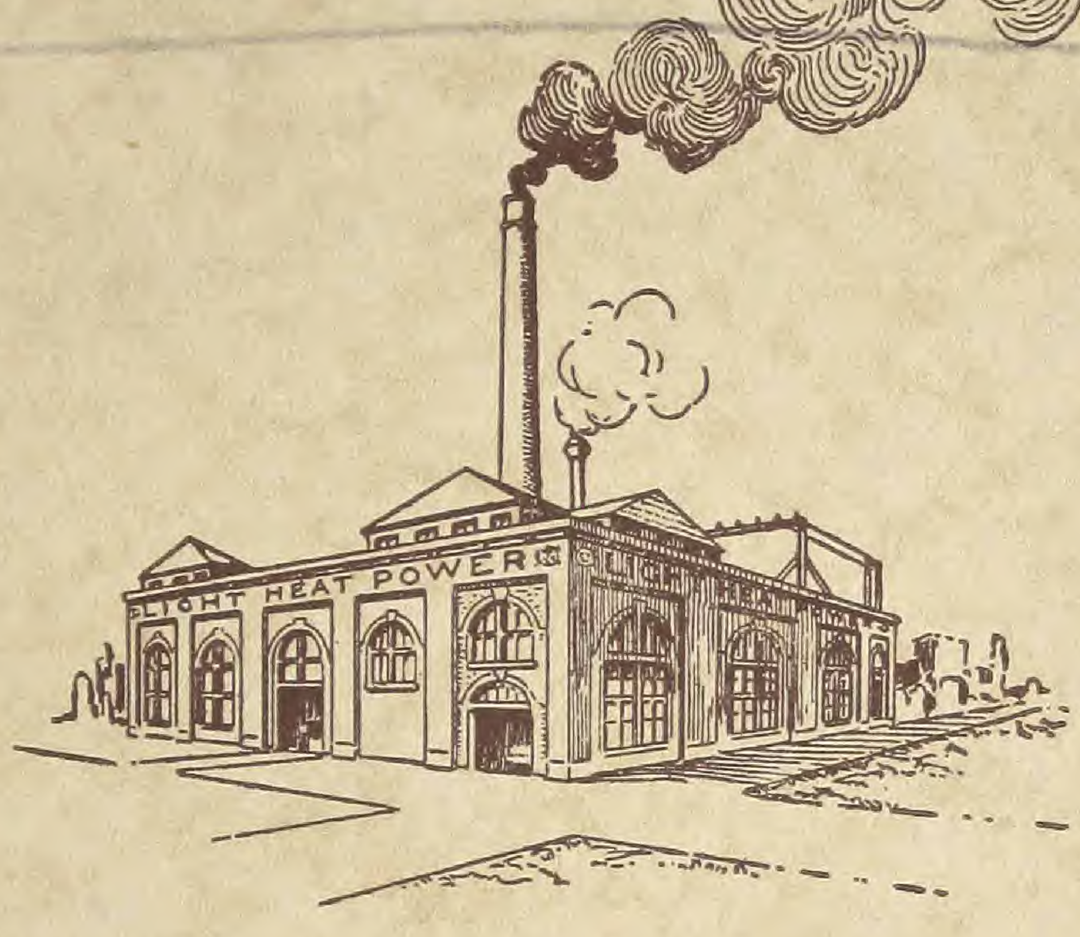
CENTRAL STATION HEATING



AMERICAN
DISTRICT
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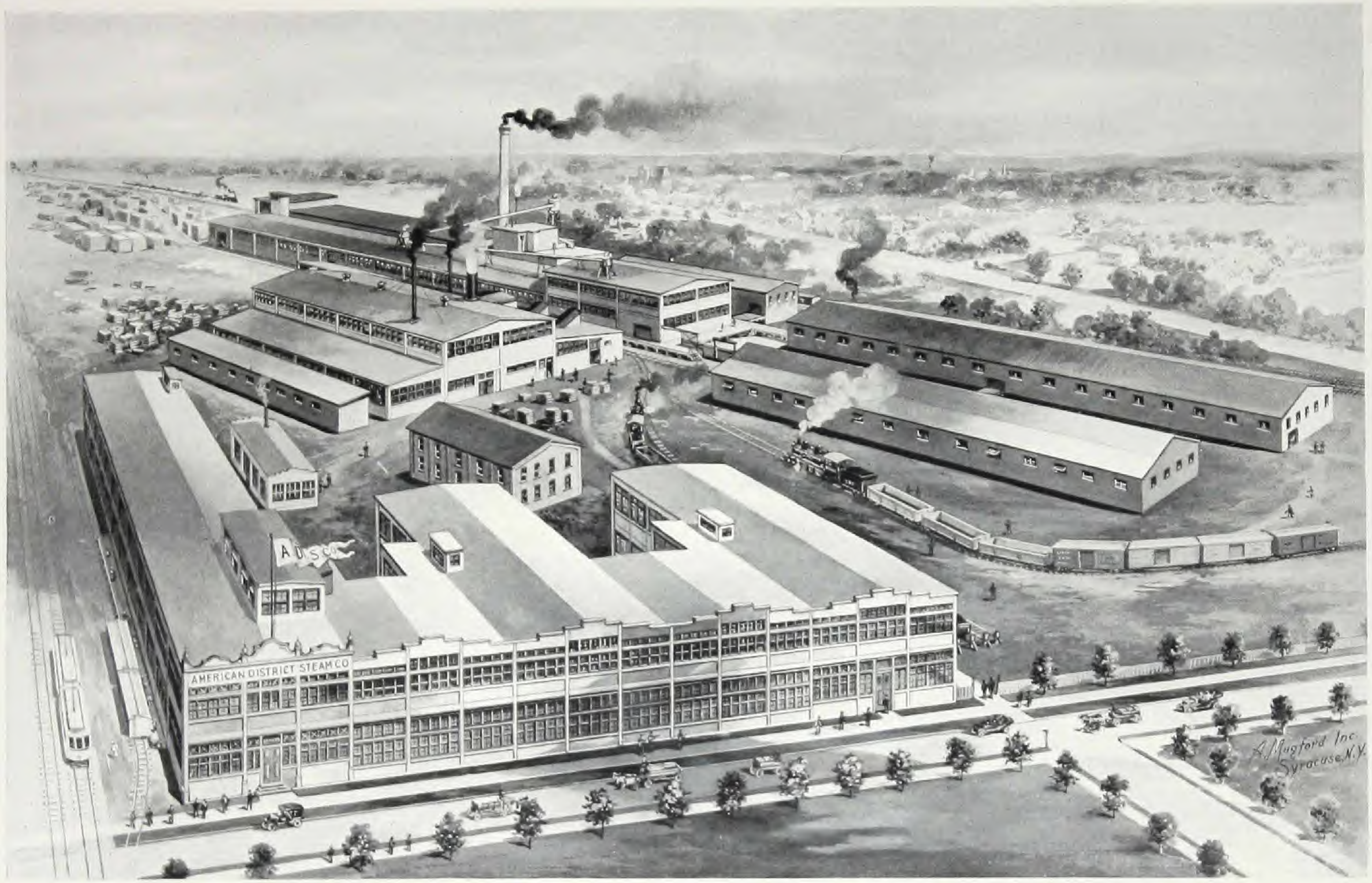
Central Station Heating

The American District Steam Co.

North Tonawanda, New York

Lockport, New York Chicago, Illinois



General Offices and Works, North Tonawanda, N. Y.

THE illustrations throughout this book are from photographs taken in progressive cities and towns in almost every state of the Union where we have installed our modern underground steam heating system. The views comprise private residences, business buildings and entire blocks, the heating of which is by live or exhaust steam delivered through underground mains from a central station. There are also illustrated points of mechanical interest and of construction.

Central Station Heating

THE purpose of this pamphlet is to call attention to a well developed enterprise in the design, installation and operation of public service plants, which is that of combining the construction and operation of an electric light and power plant, with a central station system of underground mains for the distribution of exhaust steam for heating purposes.

The engineering student who investigates the evolution of the art of developing steam power from coal, cannot fail to note that engineers, when designing power-producing machines and general power plant equipment, have at all times sought to attain the greatest amount of power from a given amount of fuel, and that their efforts have been mainly directed to reducing the amount of steam and fuel consumed for each unit of power produced.

The design of reciprocating engines, high pressure turbines and exhaust turbines, most generally in use, together with the various types of apparatus comprising power house equipment, has been carried to so high a degree of perfection, that but little opportunity would appear to remain for further improvement or development of the apparatus itself.

In recent years, however, the attention of many well-informed engineers has been directed to the proposition of utilizing for financial profit, the greatest quantity of energy contained in the fuel burned, rather than the mere transformation of the greatest quantity of heat into mechanical energy. This plan results in obtaining the greatest amount of income in proportion to the operating cost, and to the total investment in the plants and systems. It has been repeatedly shown, that the greatest proportional net revenue to be obtained is by combining the operation of an electric light and power plant, with a central station underground exhaust steam heating system, which also results in the greatest profit per dollar of operating expense.

Residence and Bank in Wyoming Heated from Central Station

The central station system of steam heating marks as great an advance over primitive methods, such as the open fireplace, coal stove, the modern hot air furnace or the individual steam and hot water plant, as does the latest type of steam engine over those first designed and manufactured.

Briefly, central station steam heating is the distribution of steam from a central generating plant through lines of well insulated and well protected underground mains, direct to the radiation in the home, apartment house, hotel, business block, school, church, factory or public building.

In 1877, in the City of Lockport, New York, the first system of this kind was introduced and installed through the efforts of the late Birdsall Holly, a noted engineer, who was also its inventor. During the years which have since elapsed, the system, devices and methods of insulation have been wonderfully improved and perfected, by the American District Steam Company. Today it is introducing throughout the United States, Canada and foreign countries its system which is recognized by public service companies, as "Standard" equipment for the distribution of steam from central stations.

Not only has the Company greatly improved upon the original construction, but it has constantly added many

The First Central Station Steam Heating Plant,
Lockport, N. Y., 1877

Business Block and Residence in a Progressive City in Indiana, Heated by Exhaust Steam from an Electric Light Plant

new devices and methods, proven through years of experience to be absolutely necessary for the most economical distribution of steam, and for the most durable construction. None of the devices or materials used in the original construction and for many years following, are being installed at the present time.

Experience has demonstrated that, during from seven to nine months of the year, a ready market may be found for all of the exhaust steam which can be supplied from an electric light and power plant, on account of the constant demand for steam for heating purposes. The degree of financial success resulting from the operation of an electric light and power plant in combination with a steam heating system, where climatic conditions and the range of temperature insure a demand for heat, depends upon several conditions, each of which has a more or less important bearing upon the final results:

First. The generating station should be reasonably adjacent to the district which it is proposed to serve, in order to reduce the investment necessary to reach the prospective business.

Second. One of the most important features to be considered is the exclusive use of devices and methods of construction, which are "Standard," and which have been proven by long experience, to reduce to a minimum, the losses in transmission, maintenance and depreciation.

Third. The operation of the plant upon the meter basis of charging (measured service).

Fourth. Total amount of business secured to total amount procurable.

Fifth. Efficient management.

When a central station steam heating system is combined with an electric light plant and operated under the above conditions, a handsome return on the investment is certain to result.

That the operation of such a combined plant will prove a paying investment, is attested by the reports received from many companies

in cities, where properly constructed and well managed heating systems have been installed.

It is by the sale of exhaust steam for heating purposes that this "potential" income is made available. It is the invariable experience that the distribution and sale of heat through a central station exhaust steam heating system, results in a far greater net profit, than any possible saving of fuel through the exclusive use of modern condensers. "The greatest profit results when the steam is condensed in the customers' radiators, rather than in the condensers at the station."

Lockport, N. Y. Shop, American District Steam Co.

To those interested, the American District Steam Company will be pleased to discuss financial results of District Steam Heating in cities both large and small.

Heating by exhaust steam presents to the electrical industry, other considerations in its favor aside from the direct income derived from the sale of the steam. It is a most efficient aid in securing electric light and power business now being served by isolated plants. These plants exist principally because of the fact that heat must be furnished. For example: In a city in the Middle West, there were in operation recently twenty-two isolated plants; the public service company installed a modern central station heating system, and, as a direct result of their ability to furnish heat, they were able in less than one year to secure the electric business of all but two of the isolated plants.

The advantage to an electric company operating a heating plant, when in competition with other companies not so equipped, is quite apparent, for the reason that they are able to furnish the three most essential commodities, LIGHT, HEAT and POWER. Another advantage results from the fact that the electric company already sustains business relations with many of its prospective heating customers.

The present standard of materials, devices, etc., used in the construction of an underground steam heating system, together with the accumulation of a vast amount of data covering the operation of both live and exhaust steam systems in different parts of the United States and Canada, is due to the long experience and perseverance of the American District Steam Company. Since its organization, it has given constant attention to the subject, resulting in the development of a system which is now recognized as "Standard." It is a system of underground steam piping installed by competent engineers, who have become skilled in this particular branch of engineering, and who are employed for this work exclusively.

A short description of station equipment and the construction of underground systems, it is believed, will be of decided interest.

First Residence Heated from a Central Station Steam Heating Plant, Lockport, 1877
This Residence was Remodeled in 1899

Plant Equipment

Every steam-driven electric light or power plant is equipped with engines of either the reciprocating or turbine type, with boilers, pumps, and in many cases economizers, condensers, etc. In "Combination" plants, the condensers are used during the nonheating months, and in part also during the heating months when the amount of exhaust steam is greater than the heat demand; the exhaust piping from the engines being arranged so that any engine or any number of engines may exhaust to the heating system or into the condensers, or to the atmosphere, as local conditions require. The only other station connections necessary are, a live steam connection from the boilers direct to the heating system, in which there is placed

an automatic high pressure reducing valve, adjusted so as to open when the heating demand is greater than the available exhaust steam. A by-pass is placed around the reducing valve for emergency use in case the valve needs adjustment or repairs. A "back-pressure" valve is required in the "atmospheric" exhaust pipe. In the exhaust main leading to the underground heating system, an oil and water separator is necessary, which completes the station equipment, with the exception of desired gauges, recording devices, etc.

Pressure Required

An initial pressure of from two to five pounds is sufficient for proper circulation in the most extensive underground exhaust steam heating systems of our modern design and construction.

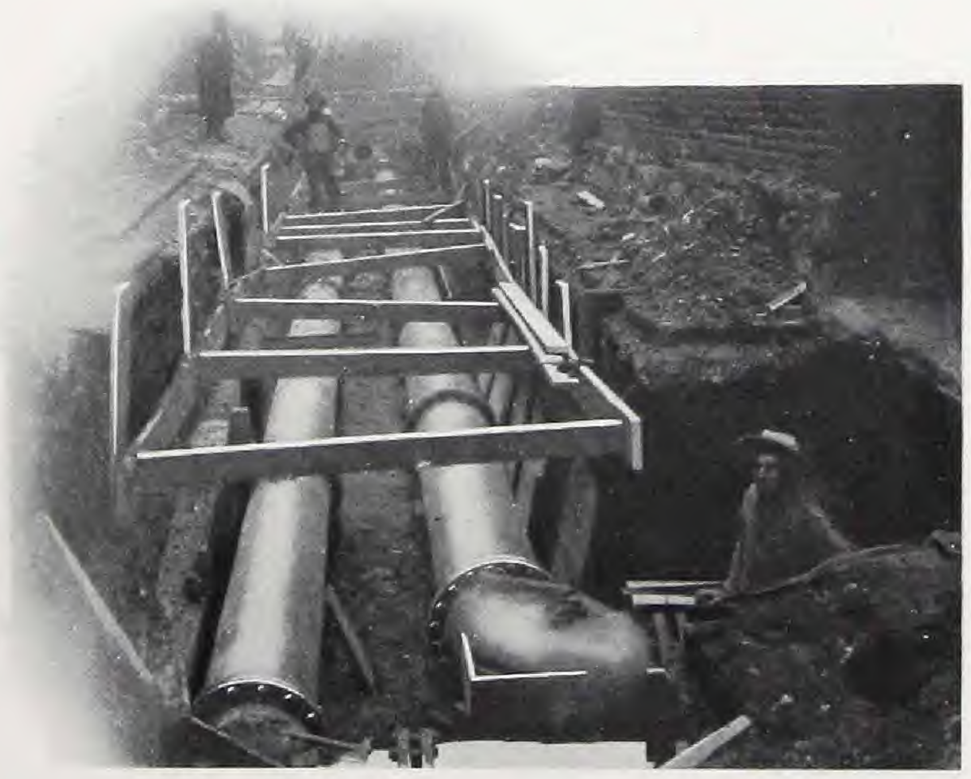
Residence in Progressive Pennsylvania City Heated from a Central Plant

Central Station Steam Heated Business Block and Residence in Rhode Island

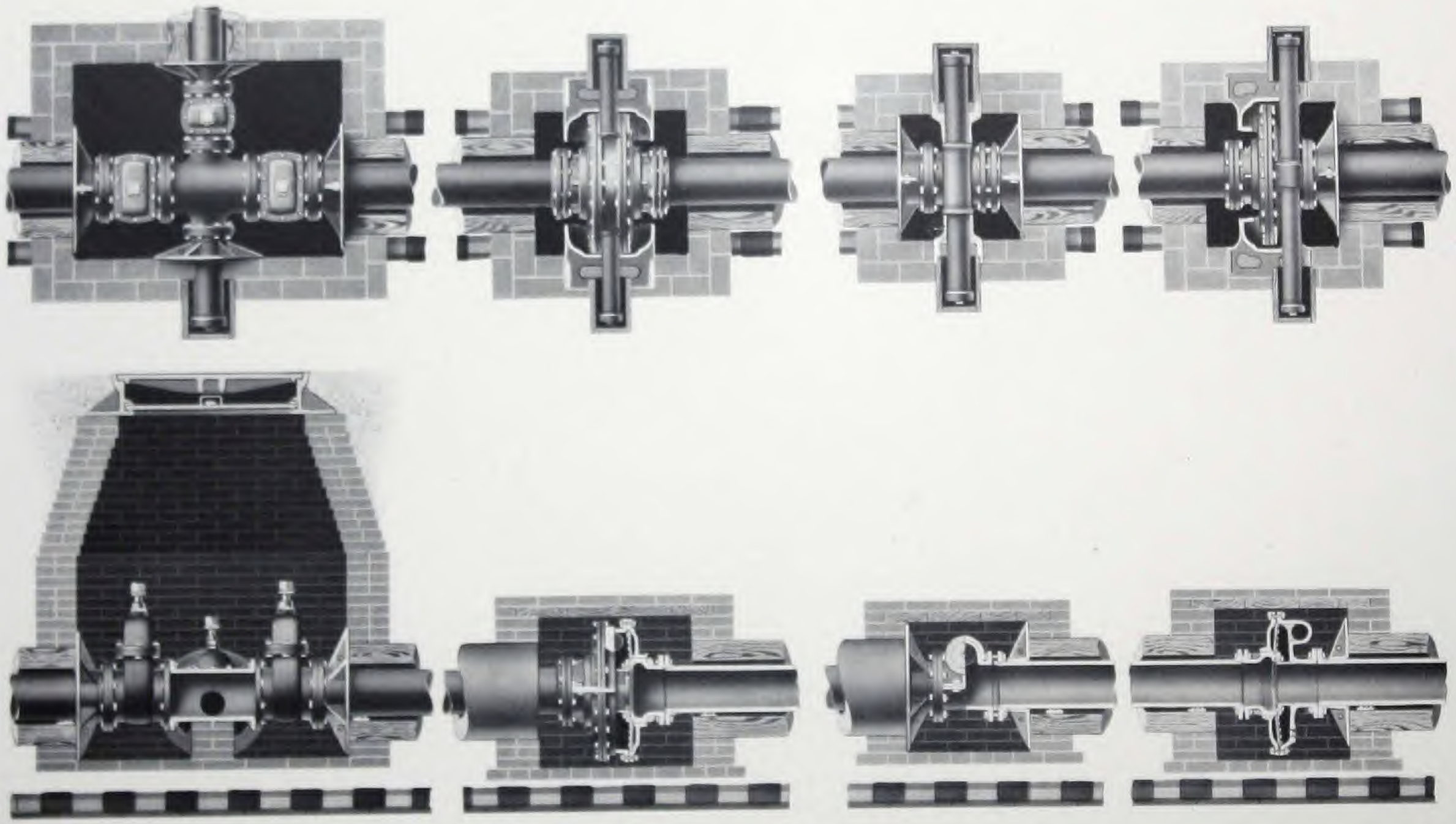
Installing Underground Steam Mains in Large City

Evolution of Construction of Underground Steam Mains

For the purpose of determining by actual experience, the durability and efficiency of the different methods of insulating underground steam mains, the American District Steam Company at various times, installed mains at Lockport, N. Y., and elsewhere, employing every known material and method, which appeared to have some merit. Brick conduits, having eight-inch side wall, four-inch concrete bottoms and tops, were constructed, in which were placed wrought iron line pipe covered with many different kinds of insulating materials, such as asbestos, hair-felt, mineral wool, magnesia covering, cork and other materials. Other mains were installed using the same kinds of insulating materials, but in place of the brick conduits they were incased in vitrified pipe, cement casing, wood boxes, two inches and four inches thick, filled with sawdust, etc. Still another method employed, was the installation of mains using full weight strictly wrought iron line pipe covered with sheet asbestos, which was enclosed in a round tin-lined, kiln-dried white pine stave casing, having shells from four inches to five and one-quarter inches in thickness, with an interior diameter sufficient to allow an annular dead air space of



Twin Feeders from Heating Plant in Large City in Missouri



Plan and Sectional Elevation "Variator Construction"

at least one inch between the tin lining and the asbestos covering, the pipe being centered in the casing by means of guides and rollers.

Records were kept of transmission losses, exterior temperatures, ground temperatures, maintenance, etc., and from an exhaustive comparison of the results of these various installations, the last mentioned method is being used in the systems today, and, in conjunction with positive anchorage and provision for expansion and contraction, it was found to be far superior to all others as to cost, efficiency, etc., and is known as the American District Steam Company's "Standard Construction."

Installation of Steam Mains in Rhode Island

Buildings Heated by Exhaust Steam from Central Station

Materials and Devices Used in the Construction of "Standard" Underground Systems

THE American District Steam Company manufactures in its own factories, all of the devices and insulation required in the construction of underground steam heating systems installed by them. Only the best materials are used, and the greatest care is observed in all processes.

Underground Construction in a Western City

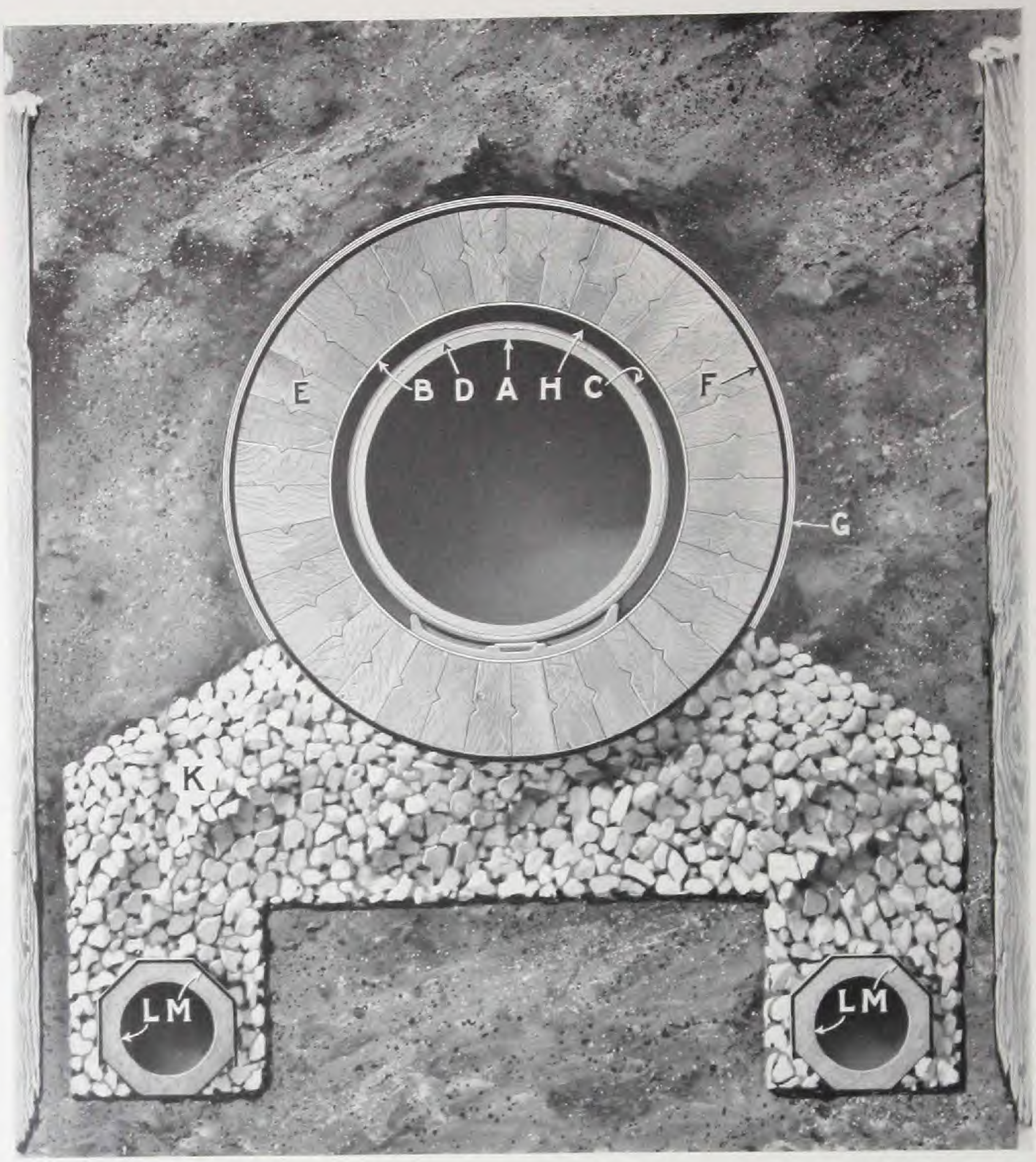
While the strictly WROUGHT IRON LINE PIPE, used in all construction, is not manufactured by the Company, it is, however, furnished under the rigid specification of the Company's engineers as to weight, test, chemical composition, length and type of threads, recessed couplings, etc., and therefore the sterling qualities of all wrought iron pipe used is assured.

The various fittings and special devices used in the underground system, are designed for the particular purpose for which they are to be used. This condition does not apply alone to the various devices providing for expansion and contraction, anchorage, insulation, etc., but to every detail that enters into the construction of the system.

Hauling Pipe to Trench

Wood Casing—Insulation

The wood used in the manufacture of our steam pipe casing is carefully selected live, white pine timber, thoroughly air and



CROSS SECTION "STANDARD CONSTRUCTION"

A—Wrought Iron Pipe
B—Tin Lining
C—Copper Wire
D—Asbestos Paper
E—Standard Wood Casing
F—Asphaltum Coating
G—3-ply Extra Heavy Tar Paper
H—Dead Air Space
K—Crushed Stone
L—Drain Tile
M—Tar Paper Strips over Tile Joints

Installing 30-Inch Steam Main in Progressive City of Middle West

kiln-dried, then cut into radial staves, each stave having a tongue and groove running its full length. The staves are firmly banded with $\frac{3}{16}$-inch galvanized steel wire which is spirally wound under a very heavy tension and embedded into the wood by means of a steel roll, thus leaving the outer surface practically smooth. The casing is then coated with a quarter inch of asphaltum-pitch and rolled in sawdust and lined with specially prepared AAAA charcoal tin plate. The ends of the casing have four-inch mortise and tenons which are thoroughly creosoted and oiled, to furnish protection from the elements.

Reconstruction—Substituting Wood Casing for Tile

This method of insulation has not only reduced to a minimum the evil of electrolysis, the importance of which will be recognized by all engineers, but the efficient protection against the loss of heat has resulted in an extremely low factor of main condensation or transmission loss. This factor varies from one-half of one per cent of capacity and upwards, depending upon the per cent of capacity of the pipe which the heating demand requires.

Wood Casing "Standard Insulation"

The wood casing described in the foregoing paragraphs, after being underground for several years, has been found to be in as perfect condition as when first installed. The wood fibre was found as strong, and the tin lining practically as bright as when installed. The durability and protection afforded by this insulation, has been demonstrated by long experience.

Full weight wrought iron line pipe has been found to be far more lasting for underground work than steel pipe, and from observations of the mains at Lockport and elsewhere, it has been found that wrought iron pipe, after being underground for many years, remained unpitted and without any signs of corrosion, and where protected by the insulation from electrolysis and surface water, it was found in perfect condition.

Similar tests and observations have shown that the other methods of insulation do not fare so well in their struggle against the elements and local conditions. For instance, where piping has been incased in wood boxing, the boxing rotted and caved in, and the pipe was badly rusted, and found to be very much out of alignment. Where the pipe was placed in brick conduits filled with mineral wool, asbestos, magnesia, etc., it was found to be without protection,

the moisture having completely destroyed the insulating materials. It can be readily understood that vitrified pipe from the nature of its substance is not an insulation, but instead radiates heat readily. It has been found to be almost worthless for insulation or permanent protection, as the expansion and contraction, together with the settling of the ground, cracks practically all the joints and breaks the tile, thus permitting surface water to come in contact with and destroy the steam pipe.

These results emphasize the genuine worth of our "Standard Construction."

Underdrainage

One of the most important points to be observed in the construction of an underground heating system is to prevent any water coming into contact with the pipe. This problem is solved by providing adequate underdrainage, and is accomplished by the use of

Pennsylvania Residence Obtaining Steam Heat from Central Station

coarse drain tile, broken stone, etc., installed in the trench, approximately as shown in the illustration on page 20. The tile is laid to a perfect grade, and at suitable points is provided with proper outlets.

Expansion and Contraction

The problem of perfecting an automatic packingless device to provide for taking care of the expansion and contraction of the iron pipe, was one which was not solved until after several years of experience, during which period the American District Steam Company thoroughly tested many devices submitted by engineers, and finally adopted a mechanism known as a "Variator." The variator as now improved and manufactured, is conceded by engineering authorities, to be the only perfect packingless expansion device made.

Double Variator

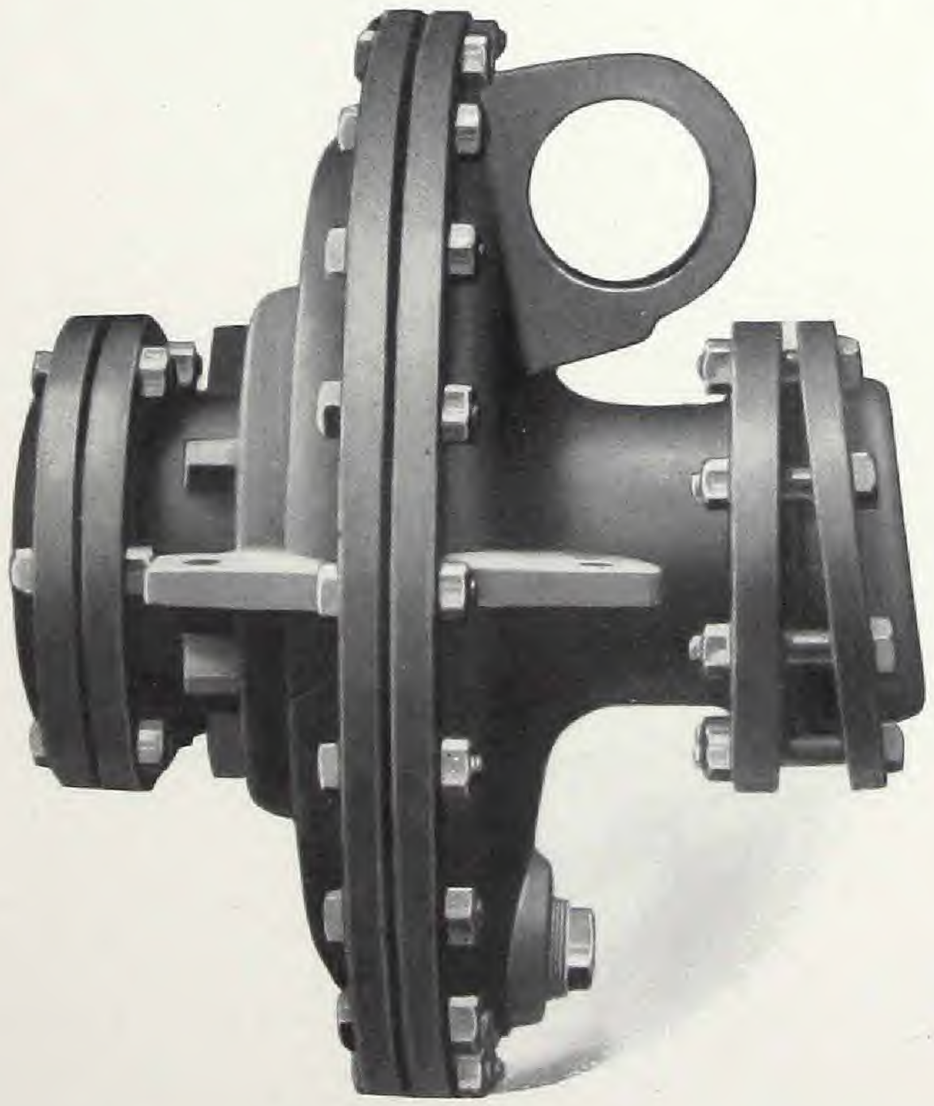
In order to avoid the expense due to frequent repacking and the use of a great number of manholes, it is desirable in underground construction, to have an expansion device which does not require packing, or in fact any attention after installation. The variator

fulfills these conditions, and also, owing to its design which embodies the principles of an efficient separator, allows dry steam only to enter the consumers' premises, through the services which are taken off the top of the variator from its fixed portion.

The variator is made in two styles, the "double" and the "single." The double variator has two corrugated copper diaphragms, and is constructed with a fixed portion and two movable ends, providing for the expansion of two sections of pipe, each fifty feet in length.

Where underground obstructions are encountered and slight angles or deviations from a straight line are necessary, a single variator is used. It differs from the double variator, having only one copper diaphragm and one movable end, the other end being fixed or anchored.

The required angle for changing the grade or alignment, is made at the fixed end of the single variator by means of a patented adjustable annular wedge, placed between the flanges.



Single Variator, Showing Adjustable
Annular Wedge Between Flanges

Double Expansion Joint

For use where manholes in the streets are not prohibitive or objectionable, the American District Steam Company has perfected a special type of "Expansion Joint," capable of taking care of the expansion of long sections of pipe. These expansion joints are made in two styles, double and single, with brass slips, and in addition to having the usual form of packing, they are of such special construction, including water rings, that it is unnecessary to pack the glands as frequently as with the ordinary type. The expansion joint is provided with service openings, so placed, that main condensation cannot enter the service pipe.

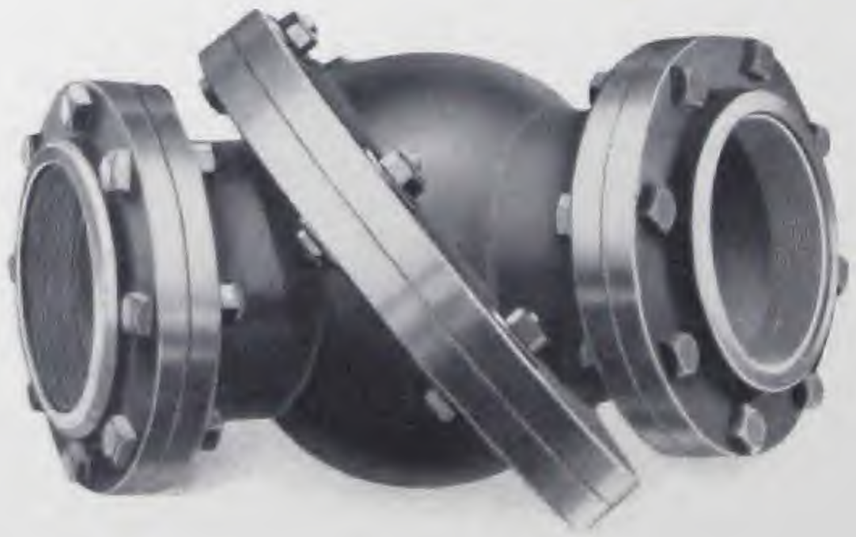
Double Expansion Joint, Showing Method of Anchoring

Library in a Western Town Heated by Steam from a Central Station

Block of Residences in a Pennsylvania Town Heated from a Central Station

Anchor Special

Midway between double variator or double expansion joint, anchor specials are placed to securely anchor the pipe. The anchor special is provided with top service openings similarly placed to those on the double expansion joint. At this fitting, as at the single variator, a change of grade or alignment is made by the use of adjustable annular wedges, or if the change of grade or alignment is greater than ten degrees, a special fitting known as an "Angle Joint" is used.



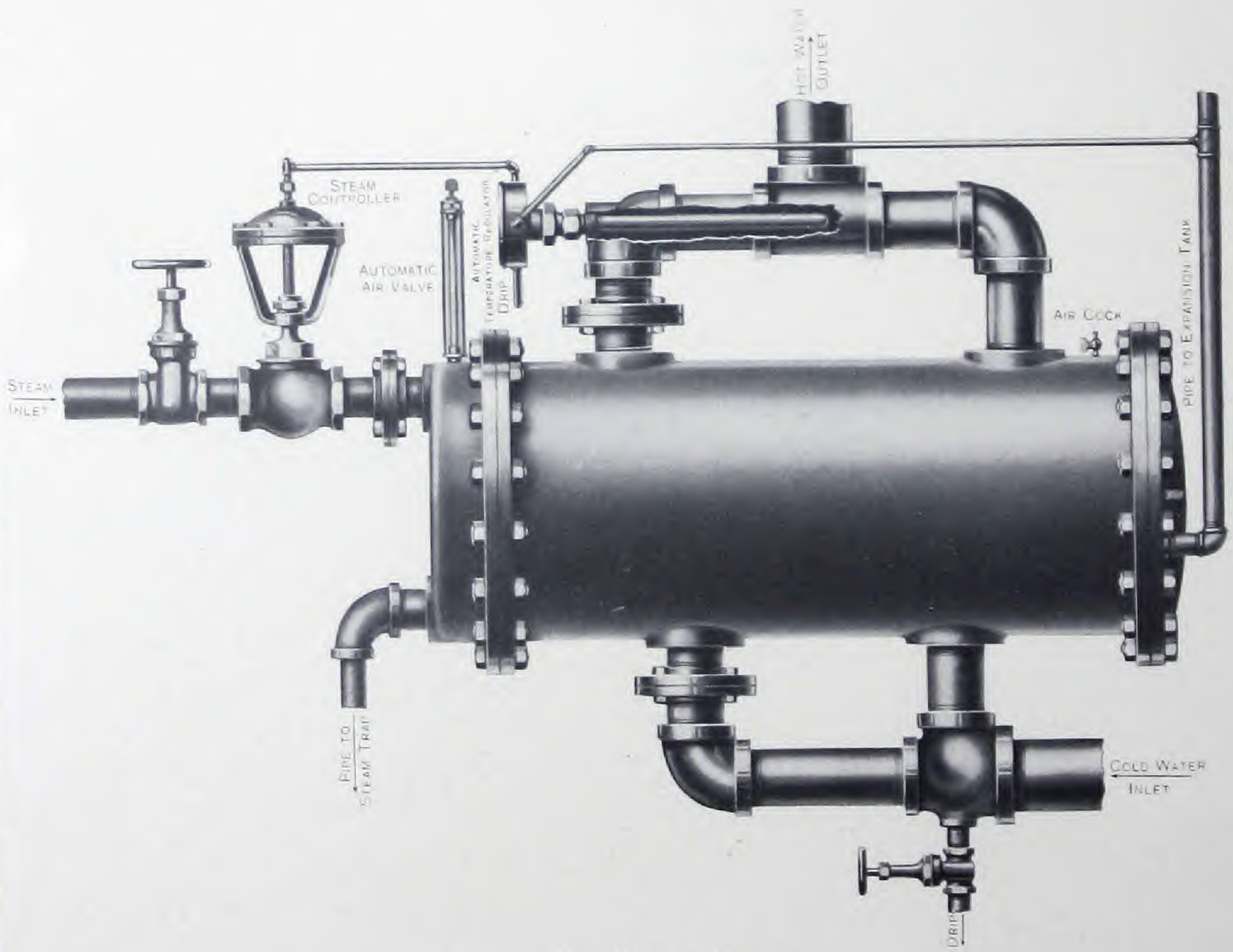
90° Angle Joint

The use of variators or special expansion joints is by far superior to the practice of using offsets, U-bends or swings in the piping for taking care of expansion. The "offset" has proven decidedly crude and unsatisfactory, due to the liability of breaking fittings at bends, the decreased flow of steam due to friction, which means a lessening of the capacity and efficiency; the increased length of the main and the consequent increased loss by radiation, and the added cost of construction, trenching, backfilling, repaving, etc. Further, it does not permit services being taken from fixed points, except at infrequent intervals.

Residence, Pennsylvania City Supplied with Steam Heat from Central Station

Commercial Advantages

One of the many points in favor of the installation of a combination electric light and steam heating plant, is the ease with which customers are secured. Where buildings are already piped for steam heating, but few changes in piping are required, the minor connections necessary being inexpensive. If buildings are not equipped for steam or hot water heating, the first cost of the equipment necessary is considerably less than the installation cost where similar service is to be provided by independent boiler plants. Where a consumer desires to continue heating by water, it may be readily done by using the steam from the street main to heat the water. This service is provided by the installation of a special water heater.



Hot Water Heater

Method of Charging for Heating Service

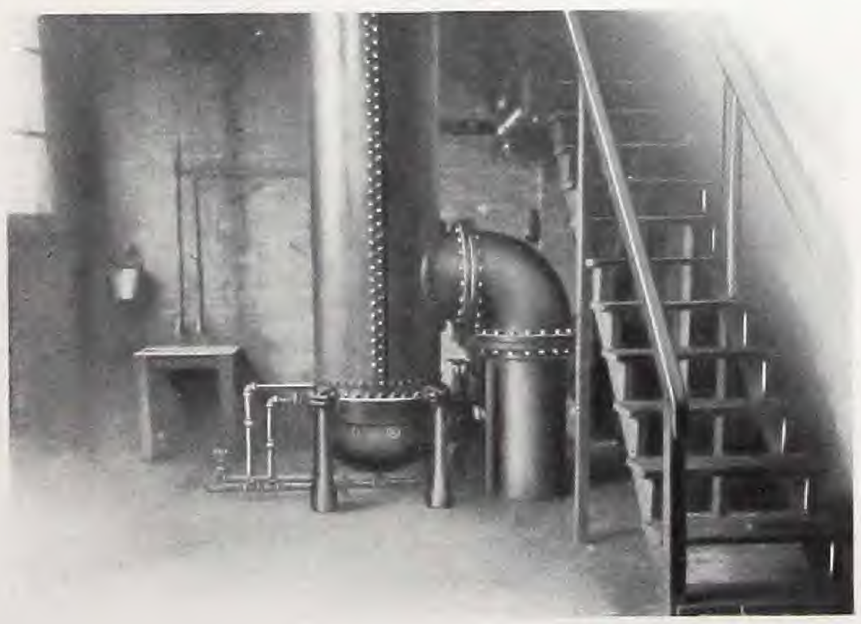
Steam, like gas, electricity, water and other commodities, may be used conservatively, or heedlessly wasted, and previous to the design and development of an accurate meter, it necessarily had to be sold under some method of computation, which resulted in a fixed annual charge.

The first method of charging was one based upon the number of square feet of radiation or heating surface placed in the building heated.

Little or no attention was given to the matter of the amount of radiation compared with the cubic feet of space, square feet of exposed wall surface, square feet of glass surface, etc., nor any distinction made between direct and indirect radiation, and thus, there was a considerable difference in the amounts paid by the various consumers, with a constantly decreasing portion of radiation to space heated, resulting in decreasing revenue, as well as unsatisfactory heating service.

Rates per square foot per year were increased, but the profit of operation was generally unsatisfactory.

The next step was to base charges upon the cubic feet of space heated, with a demand by the company, that the consumer should install sufficient radiation to insure satisfactory service in severe



Exhaust Connection to Heater

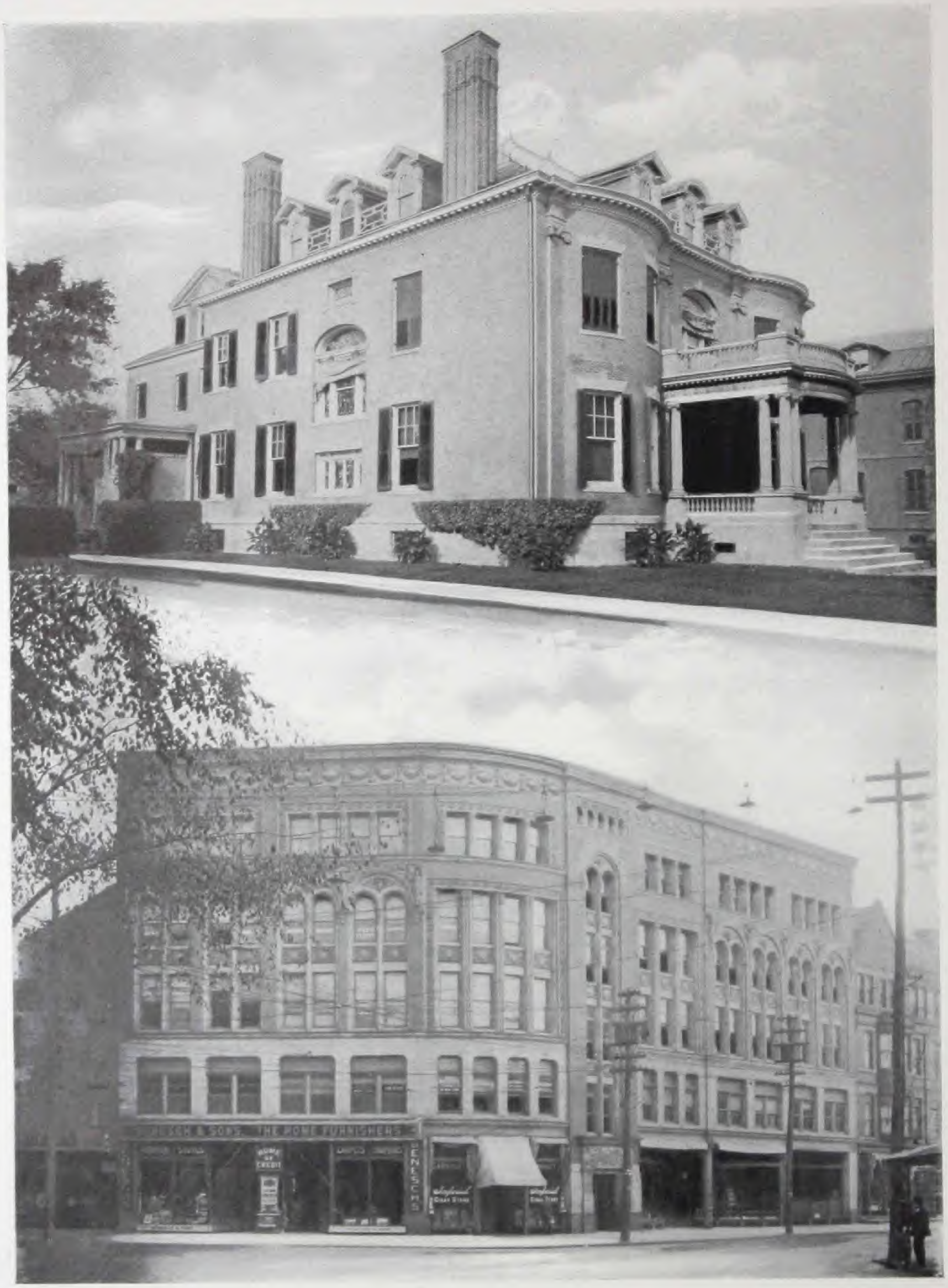
Hotel and Residence Heated from Central Plant
in a Progressive Canadian City

winter weather, with a steam pressure from two to five pounds at the service value.

This method was followed by a sliding scale of rates, varying with the size of the building heated, its exposure, construction and use.

Later, meters were developed, and a considerable number were placed, to determine the amount of steam being consumed in various types of buildings. These meters showed very much greater consumption at all times than had been estimated, and also showed great waste, particularly during all periods when the outside temperature was such that rooms could be comfortably heated with windows and doors left open. The waste of steam does not in any

Modern Western Hotel Supplied with Light, Steam Heat and Power from Central Station



Pennsylvania Residence and Business Block Heated by Live
Steam from Central Plant

way benefit the consumer, but causes a decided loss and injury to the service company. It overtaxes the capacity of the heating mains, resulting in the company being unable to extend the system and serve additional business, and every pound of steam wasted by the flat rate, or contract customers, is a direct financial loss to the company. If, then, in order to make the heating service profitable, the company insists on rates sufficiently high to make the sale of steam to the most wasteful customer profitable, the cost of heating then becomes so much greater than the consumer can produce his own supply, that the company is unable to secure enough heating patronage to insure success.

The introduction of the meter method of charging, often referred to as "measured service," has resulted in conserving the consumption of steam, first by the consumers covering piping in basements and through rooms not requiring heat; second, by "weather-stripping"

Entire Block Heated from a Central Station
in a Progressive Eastern Town

Hotel in Missouri Heated from a Central Station by Exhaust Steam

Business Block in Wisconsin Heated by Exhaust Steam from a Central Station

windows; third, by keeping doors and windows closed while radiation is being supplied by steam; fourth, by installing economizing coils to utilize the heat in the water resulting from condensing steam in direct radiation and pipes; fifth, by closing flues in grates, and in various other ways.

Entire Block Heated by Exhaust Steam from a Central Station

This, in turn, has resulted in the company adopting the meter rate, which places the cost of heating within the reach of all, and at the same time producing profits quite satisfactory to the service company. The present popular method of rate making, includes the cumulative sliding scale which reduces the price of steam according to the quantity used.

Tile Insulation Being Replaced with "Standard Casing" in Pennsylvania Town

New York City Apartment House Heated from a Central Station

Millionaire's Residence Heated by Steam from Central Station

Development and Construction of Meter

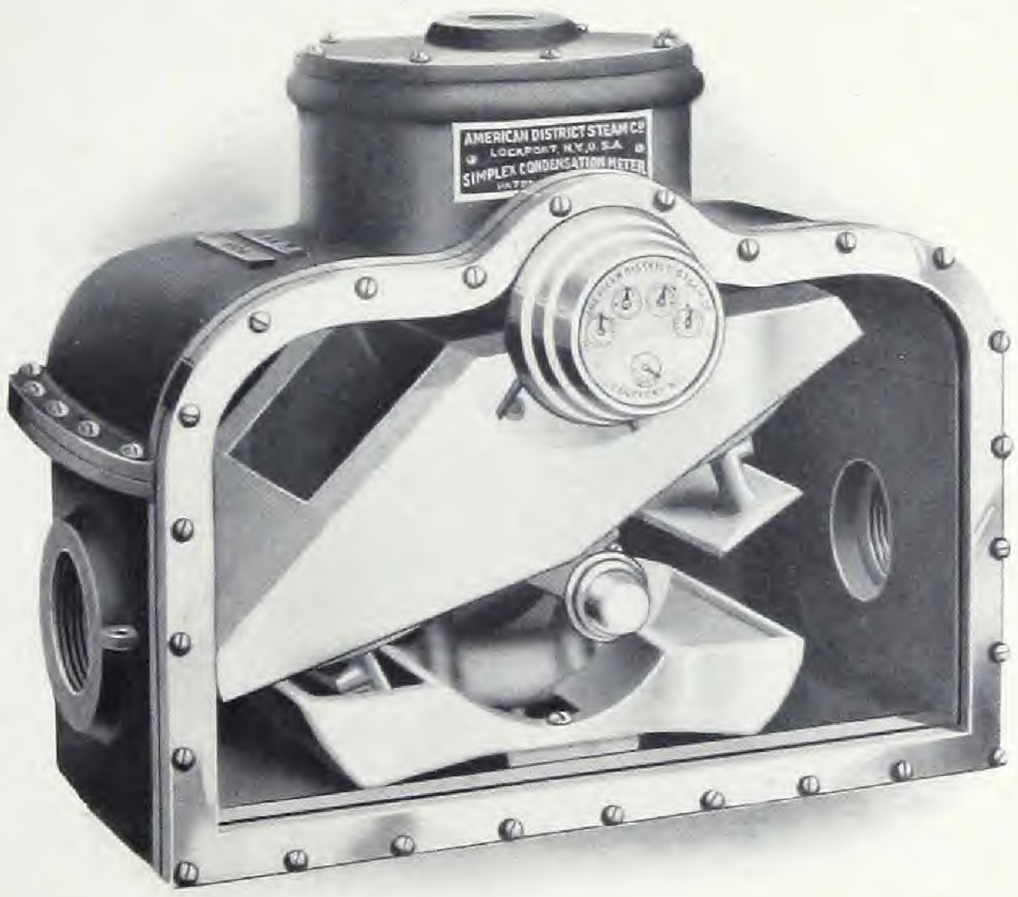
Public service companies early realized the imperative necessity of accurate meters by which to determine the amount of steam used by the customer. This need was recognized by steam heating companies and engineers after several years of study and experiment, devised and perfected a weighing and recording device, known as the "Simplex Condensation Meter." This device has been thoroughly tested and proven accurate, and today there are many thousands in use in all parts of the country giving perfect satisfaction.

Residence in Pennsylvania Heated by Exhaust Steam

A Colorado Hotel Heated by Steam from Central Station. The Cooking is also Done by Steam Supplied by the Central Station

Basic Principle of Meter

The measurement of heat delivered by steam, depends upon the physical laws governing the transformation of water to steam and vice versa. It has been scientifically established, that in changing water to steam, a certain unvarying quantity of heat per unit of weight must be added, which in turn, is given off when the steam is condensed; it therefore follows, that a given quantity of condensation represents a definite quantity of heat delivered to the consumer.



Condensation Meter

Construction of Meter

The condensation meter consists in the main, of a bucket or receptacle which is divided into two equal compartments, and mounted on a bearing in such a manner, that a tilting movement is

A 900 Room Office Building, State of Washington, Heated from
Central Station, Several Blocks Away

caused by the alternate filling and emptying of the two compartments. The quantity or weight of condensation required to cause the bucket to empty, is predetermined and depends on the size of the meter. Each movement of the bucket is recorded by the registering device, and thus an accurate record is obtained of the weight or amount of condensation passing through the meter.

Unit of Measurement

For convenience in computing charges, 1000 pounds of condensation is taken as a basis, and represents a definite quantity of heat consumed. This has also been found to be a convenient unit for determining the cost and selling price of steam.

Club House in Progressive Far Western City Heated by Exhaust Steam from Central Station

An Illinois Residence and Court House Heated from Central Station

Pennsylvania Court House Heated from a Central Station

Personal comfort is the greatest essential of the perfect home, and by perfect comfort is meant, ALL those conditions which contribute to the welfare of its occupants. Prominent among these conditions are sanitation, ventilation and the ideal regulation of the heating apparatus.

It takes but little argument to convince the prospective consumer of the fact, that so far as the ideal conditions of perfect regulation of heat are concerned, there is no method of heating the home to be compared with the central underground steam heating service. The best evidence of the truth of this is found in the statements of the thousands who are now having heat delivered to them in the form of steam from a central station, instead of generating their own.

Among the most important advantages which the underground steam heating plant offers are the following:

A Central Station Heats this Ohio Bank and Office Building

Absence of coal, ashes, dust and dirt, deadly coal gases, and the constant annoyance of looking after the individual furnace.

A reliable and perfectly regulated service is to be had at all hours—day and night—during the heating season.

No boiler to be installed, and the consequent added safety from fire loss, and a reduction in insurance rates.

An absence of boilers, coal bins, ash heaps and other nuisances, thus increasing the available space in basements.

No expense due to the depreciation of apparatus, boiler, etc.

A quick, simple and efficient means always at hand for heating water for bath or laundry purposes.

Stores, offices, apartments, residences, etc., in greater demand.

No fires to build and look after.

In short, the installation of an underground steam heating system will always be a welcome addition to the modern improvements of any favorably located city or town.

Maryland Business Block Heated by Steam from a Central Station

A Minnesota Post Office Heated by Exhaust Steam from an Electric Light and Power Plant

District Steam Heating as an Investment

District Steam Heating as an investment, offers a most favorable opportunity for capital. The income per mile from a system of steam mains is far in excess of either gas, electric light or water. Most consumers pay more for heating service than for all the other public services combined. The financial success of the hundreds of companies which have installed our system cannot fail to impress the investors by reason of their pronounced success.

Detailed facts and figures bearing upon this feature will be gladly given to any company or persons interested in the operation of a combination plant.

Another feature which will surely appeal to the prospective investor, is found in the fact that the application of exhaust steam for heating purposes is not necessarily limited to electric light and power plants, but may be installed in connection with any source of exhaust steam.

Installing the System in a Western Town

Building in Progressive Illinois City Heated by Steam from a Central Station

A Court House in Missouri Heated by Steam from a Central Plant

Conclusion

The installation of an underground exhaust steam heating system under the methods employed by the American District Steam Company, does not mean the outlay of large sums of money, the serious upheaval of public streets or highways or the disturbing in general of the peace or order of any city or town, but it simply means the construction to which even the most conservative of city officials or residents could not object, of an underground steam heating system which has been carefully designed and planned by skilled engineers and their assistants.

Never in the history of the Company has any opposition or complaint come from official sources, and in every instance the

Business Block in a Progressive Pennsylvania Town Heated by Exhaust Steam from Central Station

A Residence in Alabama Heated by Exhaust Steam from a Central Station

Installing Steam Mains Over a River

residents have welcomed the introduction of district steam heating as the greatest boom to home comfort.

To the stockholders and officers of any electric light and power plant, favorably situated, such a plan cannot be recommended too highly as a paying business proposition.

Those who are interested are requested to communicate with the American District Steam Company at any of its offices and they will be given further facts and information covering their particular conditions, or if desired, one of the Company's engineers will be pleased to call, at which time details covering the cost of the proposed installation, earning power, etc., may be discussed. Our engineers are at work constantly in nearly all parts of the United States and Canada and could call on short notice.

Modern Central Station Steam Heating Plant in a Progressive Illinois Town

Large Office Building on the Pacific Coast Containing Approximately 15,000 Square Feet of Radiation—Heated by Steam from a Central Station

San Francisco Office Building Heated by Steam from Central Plant

Office Building in Progressive Southern City Heated by Exhaust Steam from Electric Light and Ry. Plant

Installation of Steam Mains in a "Natural Rock" Tunnel

Installing Steam Mains in City in Minnesota

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